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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard
SPECIFICATION FOR
GYRATORY AND CONE CRUSHERS

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR GYRATORY AND CONE CRUSHERS

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Indian Standard

SPECIFICATION FOR GYRATORY AND CONE CRUSHERS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 August 1967, after the draft finalized by the Chemical Engineering Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 Gyratory and cone crushers are widely used in mining industry and in general service as primary crushers and also as secondary or reduction crushers. They crush the rock by applying pressure to the rock between a stationary and a rotating curved surface and have unhindered gravity discharge. A gyratory and a cone crusher are similar in construction except that in the cone crusher, the conical head travels a greater distance and gyrates faster.

0.3 Particulars regarding information to be given to the manufacturer by the purchaser with enquiry or order and the information to be furnished by the manufacturer to the purchaser along with the quotation are given in Appendices A and B, respectively.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers gyratory and cone crushers which are commonly used for crushing rocks.

2. NOMENCLATURE AND TERMINOLOGY

2.1 For the purpose of this standard the various components of the gyratory and cone crushers shall be designated as in Fig. 1 and 2.

2.2 Gyratory and Cone Crushers—A machine for breaking rock or similar material, mainly by compression between a bell or mushroom-shaped crushing head and a ring of tapering cross-section within which

*Rules for rounding off numerical values (*revised*).

the head moves with an eccentric motion. The head has its axis approximately vertical and moves with an eccentric motion within the stationary ring while being free to rotate in its bearings, the shape giving a reducing aperture between head and ring.

3. CLASSIFICATION

3.0 For the purpose of this standard, gyratory and cone crushers shall be classified as follows.

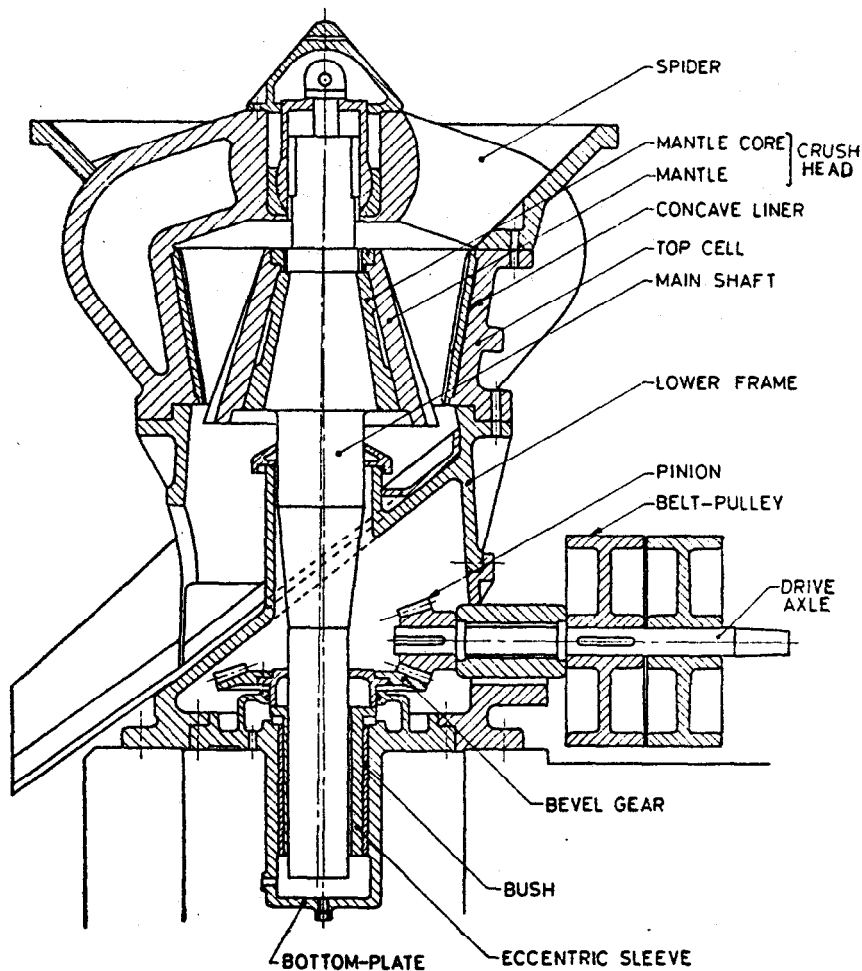


FIG. 1 NOMENCLATURE FOR GYRATORY CRUSHERS

3.1 Gyratory Crusher — The gyratory crushers shall be classified depending on the type of spindle support and also on the type of bowl.

3.1.1 Classification Depending on the Type of Spindle Support — Depending on the type of spindle support, a gyratory crusher can be of the suspended spindle type or the fixed spindle type.

3.1.1.1 Suspended spindle type gyratory crusher — A gyratory crusher in which the axis of the spindle is suspended and when driven, describes the surface of an acute cone the apex of which is within the spider.

3.1.1.2 Fixed spindle type gyratory crusher — A gyratory crusher in which the spindle is rigidly fixed both at the top and the bottom and the movement of the crushing head is effected by an eccentric sleeve running between the spindle and the crushing head.

3.1.2 Classification Depending on the Type of Bowl — Depending upon the type of bowl a gyratory crusher can be of a coarse bowl, medium bowl or fine bowl construction.

3.1.2.1 Coarse bowl gyratory crusher — A gyratory crusher in which the discharge opening can be set at not less than 75 mm.

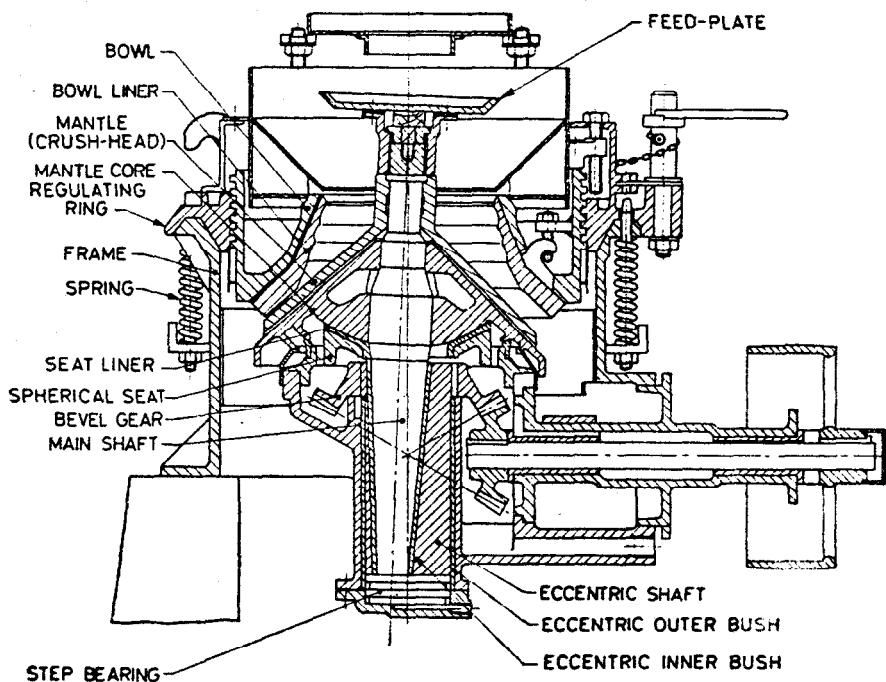


FIG. 2 NOMENCLATURE FOR CONE CRUSHERS

IS : 4255 - 1967

3.1.2.2 Medium bowl gyratory crusher — A gyratory crusher in which the discharge setting can be adjusted from 75 mm to 10 mm.

3.1.2.3 Fine bowl gyratory crusher — A gyratory crusher in which the discharge setting can be adjusted to less than 20 mm.

3.2 Cone Crusher — The cone crushers are generally classified, depending upon the type of the cone and the throw, as standard cone and short-head cone crushers.

3.2.1 Standard Cone Crusher — A cone crusher used for intermediate crushing with shallow angle of cone, long crushing cavity and small throw.

3.2.2 Short-Head Cone Crusher — A cone crusher having essentially the same frame and mechanism as the standard cone, but having a different shape of crushing cone and a smaller throw.

4. SIZE

4.1 Gyratory Crushers — The size of the gyratory crushers shall be designated by the size of receiving opening, that is, the effective gap, in mm.

4.2 Cone Crushers — The size of the cone crushers shall be designated by the diameter of the discharge annulus.

5. DESIGNATION

5.1 The designation of a gyratory or cone crusher shall include:

- a) Commonly used name,
- b) Classification,
- c) Size designation, and
- d) Number of this standard.

Example 1 :

A gyratory crusher with an effective gap of 25 mm and having a suspended spindle arranged for coarse bowl will be designated as:

Gyratory Crusher SS/CB/25 IS : 4255

Example 2 :

A cone crusher with a short-head cone having 500 mm diameter at the discharge annulus shall be designated as:

Cone Crusher SC—500—IS : 4255

6. SUPPLY

6.1 The manufacturer shall supply a certificate to the purchaser along with each machine certifying that the crusher has been inspected for freedom from visible defects and the crusher has satisfactorily withstood the trial run. Items to be covered under this certificate are given in Appendix C.

APPENDIX A

(Clause 0.3)

INFORMATION TO BE SUPPLIED BY THE PURCHASER TO THE MANUFACTURER WITH THE ENQUIRY AND ORDER

A-1. The enquiry and order should state:

- a) Description of the material;
- b) Specific gravity of material;
- c) Condition of material, such as
 Clayey Yes/No
 Moist Yes/No (if moist, state percentage of moisture, *Max/Min*);
- d) Structure of material, such as crystalline or granular or slabby;
- e) Physical characteristics and crushing strength, if possible;
- f) Size of crushed material desired, in mm;
- g) Capacity of crusher required, in tonnes per hour;
- h) Product to be used for; and
- j) General remarks.

APPENDIX B

(Clause 0.3)

INFORMATION TO BE FURNISHED BY THE MANUFACTURER TO THE PURCHASER ALONG WITH QUOTATION AND SUPPLY

B-1. The manufacturer shall give the following [information along with his quotation and supply:

- a) Type of crusher (gyratory or cone);
- b) Size and designation of crusher;
- c) Size of opening in mm;
- d) Minimum and maximum size of discharge in mm;
- e) Minimum size of feed in mm;
- f) Power requirements in kW; and
- g) Material of construction with regard to the following major components of the crusher:
 - 1) Frame,
 - 2) Main shaft,
 - 3) Eccentric sleeve, and
 - 4) Mantle.

APPENDIX C

(Clause 6.1)

INFORMATION TO BE GIVEN IN THE CERTIFICATE BY THE MANUFACTURER TO THE PURCHASER AT THE TIME OF SUPPLYING MACHINE

C-1. INSPECTION

C-1.1 The inspection report shall state that each part of the crusher has been inspected before painting to ensure that it is free from any visible defects in casting, machining, etc.

C-2. TEST-RUN

C-2.1 The test-run report shall state:

- a) The number of hours the crusher has been run continuously under no load after completion of the assembly, and
- b) That after dismantling the crusher after the trial run inspection has been carried out to ensure that:
 - 1) the construction of the crusher is satisfactory,
 - 2) lubricating condition is satisfactory,
 - 3) there is no slackness or unusual wear on any component, and
 - 4) the bearings are evenly loaded.

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